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student likes to have an exact statement of just what he is to learn. This is unfortunate, and not altogether the fault of the teacher. The teacher who omits a chapter from a book is apt to be looked upon with suspicion as a *franc-tireur*, or it may be darkly hinted that he does not understand the chapter well enough to teach it. If it should turn out that there is a large demand for this book the reviewer will take it as a sign that the teacher of mathematics is learning to be less dependent on his textbook. In any event the book will be found in the library of every progressive teacher of algebra.

D. N. LEHMER.

UNIVERSITY OF CALIFORNIA.

PROBLEMS FOR SOLUTION.

SEND ALL COMMUNICATIONS ABOUT PROBLEMS TO B. F. FINKEL, Springfield, Mo.

ALGEBRA.

481. Proposed by ROGER E. MOORE, University of Wisconsin.

Show that if the coefficients in the binomial expansion of $(a - b)^n$ (n being a positive integer) be multiplied each to each by the corresponding terms of an arithmetical progression of $(n + 1)$ terms, then the algebraic sum of the $(n + 1)$ products will be zero.

482. Proposed by C. F. GUMMER, Kingston, Ontario.

Find the necessary and sufficient condition that the infinite sequences of positive quantities $(a_1, a_2, \dots)$ and $(b_1, b_2, \dots)$ may be such that the series $a_1x_1 + a_2x_2 + \dots$ and $b_1x_1 + b_2x_2 + \dots$ either both converge or both diverge when the x 's are any positive quantities.

GEOMETRY.

510. Corrected statement (given incorrectly in the March issue).

Show how to find the equation of a line perpendicular to a side of the triangle of reference and passing through a given point, in a system of homogeneous coördinates, using the condition that two lines be parallel in this system but not the condition that two lines be perpendicular. Illustrate the method by using it to find the trilinear coördinates of the points of contact of an escribed circle of the triangle.

514. Proposed by VINCENTE MILLS, Manila, P. I.

Given an equilateral triangle, the length of the sides being unknown, and a point within, the distances from which to the vertices are given, required the length of a side of the triangle and the angles subtended at the given point by the sides of the triangle.

515. Proposed by C. F. GUMMER, Kingston, Ontario.

Show how to cut up a square carpet and make it into three equal square carpets. Estimate the total length of seam in comparison with a side of the original carpet.

CALCULUS.

429. Proposed by N. P. PANDYA, Sojitra, India.

Trace the curve given by the solution of

$$x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} = \frac{dy}{dx} + \frac{1 - 4x^2}{(1 - x^2)^{3/2}}.$$